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ABSTRACT

This is a bibliography of social sciences in forestry which includes the topics of social science applied to forestry at large, forestry's productive agents, forest production manufacturing, and marketing, trade, and demand for forest output. Each entry is described briefly and listed alphabetically by author. Sources include many professional journals and government documents. An appendix includes theses and dissertations in progress in the United States and Canada. An author index is included as well as an index to use in conjunction with the Subject Matter Classification Scheme at the beginning of the bibliography. (SA)

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SOCIAL SCIENCES in FORESTRY

A CURRENT SELECTED BIBLIOGRAPHY

NO. 51 FEBRUARY, 1980

SPECIAL APPENDIX:

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SOCIAL SCIENCES IN FORESTRY

Subject-matter Classification Scheme

Note: This outline is regarded as working for the most part from the general to the specific. Material covering two or more sections of this outline is classified in the most general of these sections. Material which is classifiable in any of two or more sections is classified in the most specific of these sections. Asterisks mark those subjects which are not represented in this issue.

I SOCIAL SCIENCE APPLIED TO FORESTRY AT LARGE

A General principles, scope, content, method

B History, status, prospects of forestry in an area, society in an area (This section includes material on forest resources alone, as opposed to that on consumer or intermediate resources alone, for which see appropriate later sections.)

1 General
2 United States, Canada
3 Other north-temperate nations
4 South-temperate nations
5 Nations in lower latitudes

C Law, politics, policy, plan, program, and their administration

D Other influences

1 Taxation

a General
b Property, general and special; severance; lieu payment
c Income, inheritance, other

2 Valuation (See also IIIA5i)
*3 Insurance
4 Social interest, value system, custom, folklore, culture
*5 Characteristics of the individual
*6 Public relations, other

E Research (For research on specific topics, see those topics.)

F Professional and subprofessional affairs, education, employment of foresters

*G Social and economic development (See also IB)

H Environmental concern

II APPLIED TO FORESTRY'S PRODUCTIVE AGENTS
(See also the individual operation or type of output in III, IV, V.)

A Labor (Some material on labor will be found in IF, IV.)

1 General, employment, demand
*2 Supply, union
3 Wage, cost hours, productivity, technology, training, return, benefit
*4 Working condition, turnover, absenteeism, safety, insurance
*5 Characteristics of the worker

B Owner, ownership, manager,entrepreneur, holding (See also IC, IIC3.)

*1 General
2 Public

a General
*b Federal, central
*c Regional, local

3 Private

a General
*b Industrial
c Nonindustrial

C Land

*1 Context of supply, requirement, etc.
*2 Description, use trend and status, interpreted description
3 Management, use prospect and plan, planning, marketing, tenure
*4 Research method

D Capital

1 General, investment, interest, finance
(For investment in forest production, see IIIE; for that in manufacturing, see IVA4.)
*2 Credit

III APPLIED TO FOREST PRODUCTION (See also IIB, C.)

A Production including nontimber commodities and services

1 General, supply, multipurpose management
*2 Christmas trees, greens
*3 Range and livestock
4 Naval stores, maple product
5 Recreation

a General
*b Research
*c Decision
*d Demand, consumer, market
e Parks and wilderness area
*f Interpretation
g Aesthetic values

III APPLIED TO FOREST PRODUCTION (Continued)

A Production including nontimber commodities and services

5 Recreation
h Consumer activities such as driving, walking, camping, etc.
i Valuation

6 Water, soil, watershed management, shelterbelts
7 Wildlife, hunting, fishing
8 Urban forestry

B Production chiefly of timber

1 General, supply
2 Soil, site, site improvement
3 Tree regeneration and improvement; plantation
4 Intermediate cutting, pruning, stand improvement
5 Harvest cutting, rotation, cutting cycle, stocking, regulation, allowable cut
(For harvesting treated as engineering, see IVB.)

C Roads, other forest-management transportation
(For transportation in harvesting, see IVB4; in manufacturing and marketing, see VD.)

D Damage and protection

1 From fire
2 Prescribed burning
*3 From insects
4 From other agencies
(For water damage and soil erosion, see IIIA6.)

E Decision making, planning, investment, accounting, inventorying
(For investment in general, see IID1.)

IV APPLIED TO MANUFACTURING
(For material on forestry in general, including forest land resources, see IB.)

A The industry in general

1 Status and trend
*a General
b United States, Canada
c Other north-temperate nations
*d South-temperate nations
e Nations in lower latitudes

*2 Directory
(Includes those covering specific branches of industry.)
*3 History
4 Decision making, planning, investment, accounting, inventorying (For a specific branch of industry, see that branch, "Operation of firm"; for investment in general, see IID1.)

IV APPLIED TO MANUFACTURING (Continued)

B Timber-harvesting industry
(Includes roundwood in general; for specific types, see IVC, "raw material." For harvesting as silviculture, see IIIB4, 5.)

1 Status and trend
2 Operation of firm
3 Utilization of the stand or tree
(For utilization of a specific product, see the branch of industry in question.)

*a General
b Logging residue and its disposal

4 Transportation (Skidding, yarding, loading, hauling to mill. For transportation in forest management, see IIIC; in manufacturing and marketing, see VD.)

C Wood-using industry

1 Lumber, allied product, pallet
a Industry status and trend
*b Production, consumption, stocks, other statistics
(For sawtimber, see IB, IVB; for sawlogs, see IVC1d.)
*c Operation of firm
*d Raw material

2 Pulp, paper, board

a Industry status and trend
*b Operation of firm
c Raw material
*d By-products

3 Veneer, plywood, panel

*a Industry status and trend
*b Operation of firm
*c Raw material

4 Bark, chips, other residue
(See also IVB3 and the industry branch in question, "Operation of firm.")
*5 Pole, piling, post, mine timber
*6 Railway tie
*7 Furniture
8 Charcoal, fuelwood, other combustibles; energy
9 Particleboard, hardboard, fibreboard, flakeboard
*10 Construction
*11 Other wood-using industry

D Other forest industry

*1 Decorative product
2 Naval stores
*3 Maple product
*4 Other

V APPLIED TO MARKETING, TRADE, DEMAND FOR FOREST OUTPUT
(For marketing and demand for productive agents, see II.)

A Demand (See also IF.)

1 General; history of consumption; consumption-production relationships
2 Consumption or production prospect, goal, requirement, prediction (For material on short-term requirement, see the industry in question in IV, "Industry status and trend.")
*3 Consumer and his preference
(For material on specific forest resources, see also IIIA,B.)

B Market, marketing, trade, export, import

1 General
*2 Futures, hedging
3 Stumpage, log
4 Lumber, plywood, composition board
*5 Pulp, paper, paperboard

a Product
*b Raw material

*6 Other wood products
7 Christmas trees, greens
*8 Other type of output (See also IIC3.)

C Price, value

1 General
2 Stumpage, log
*3 Other type of output
*4 Price reporting

*D Transportation (Includes transportation in manufacturing.)
(For transportation in forest management, see IIIC; in harvesting, see IVB4.)

1. [A BURCH WILLIAM R. JR. "The Social Meanings of Forests." The Humanist, Vol. 39, No. 6 (1979), 39-44. Discusses the following: (1) forests as personal and social metaphors; (2) forests as locales for managing potentially threatening social aggregates; (3) forests as stimuli and foci for larger social movements; and (4) forests as settings where certain intergroup bonds may be established and sustained. Concludes by exploring how the sustained-yield management of forests may have more to do with social history than with biologically based technical practices.

2. [A FAHL RONALD J. North American Forest and Conservation History: A Bibliography. Santa Barbara: Clio Press, published under contract with the Forest History Society, 1977. Encompasses published material explicitly historical in nature. Gives approximately 8,000 references to books, articles, pamphlets, master's theses, and doctoral dissertations on the history of forest utilization, conservation, wilderness and scenic preservation, as well as land policies, frontier history, and natural history.

3. [A GRANT R. K. "The Role of Economics in Forestry: The Case for an Independent View." New Zealand Journal of Forestry, Vol. 24, No. 1 (1979), 47-60. The forestry sector must begin to use the rigor of economic analysis to aid in the choice of processing options and to ensure the efficient use of the resources required. The aim of this paper is to promote discussion about the nature and role of economics in forestry, in the hope that this will improve understanding between economists and forest managers.

4. [A MILLER KENTON R. "Forests for people: a message from Djakarta." Parks, Vol. 4, No. 2 (1979), 11-12. Seven guidelines for conservation managers are interpreted from the declaration formed at the world forestry congress held in Djakarta in 1978.

5. [A SAASTAMOINEN OLLI. Conservation and Economic Theory. Univ. of Helsinki, Dept. of Land Use Economics. (1978), 89.

6. [A Proceedings Southern Forest Economics Workshop. Chapel Hill, NC. March 21-22, 1979. 110pp. Some of the papers:
COOPER, ART. "Role of Economics in Implementing the National Forest Management Act."
VAUX, HENRY. "Regulation and Other State Forest

Policies in California." ROYER, JACK. "Conclusions from a review of 50 Years of Small Woodland Owner Studies."
FEDKIW, JOHN. "Reflections on Timber Price and Market Reporting." MOAK, JIM. "Cost Trends of Forest Practices in the South."
ROW, CLARK and PAUL TEESE. "Trends in Prices Paid for Southern Pine Timber."

7. IB1 FRAYER W. E. ed. Forest Resource Inventories - Proceedings of a workshop sponsored by the Society of American Foresters and the International Union of Forestry Research. 2 vols. (1979), 1037pp. Topics covered: Multi-Resource Inventories, Biometrics, Inventory Projection-Growth, Sampling Techniques, Inventories on Successive Occasions, Sampling Aspects of Aerial Photography, Overview-Computer Uses in Forest Resource Inventory, Tropical Inventories, Biomass Measurement, Metric Conversion Strategies, Product Estimation.

8. IB2 CLAWSON MARION. "Forests in the Long Sweep of American History." Science, Vol. 204, No. 4398 (1979), 1168-1174. The role of forests in the American society and economy has changed greatly over the past 200 years, as is evidenced by data on acreage in forests, on volume of standing timber, on amount of annual wood growth, on amounts and form of wood utilization, and on prices for forest products. The two most dramatic facts in a long history of forest utilization have been the near fourfold increase in annual wood growth in the past 60 years and the persistent and major underestimate by the U.S. Forest Service of the wood production potential of American forests.

9. IB2 DE COSTER LESTER A. "Forest Industry in Northern New England." Journal of Forestry, Vol. 77, No. 9 (1979), 566-571. Large-scale forest industry is concentrated in the northern portions of Vermont, New Hampshire, and Maine. Industrial landholdings in Maine are sizeable. Both even-and all-aged management systems are feasible. Stands badly need to be cleared of low-quality trees, and in remote and inaccessible areas economic efficiency demands use of large-scale management technology-both difficult topics to explain to the public. Fractionalization of nonindustrial private holdings and vastly increased cutting for fuelwood are affecting timber supplies, particularly for firms that have been depending on ready supplies of cheap wood.

10. IB2 GOULD ERNEST M., REIDEL CARL H. "The Yankee

Forest." Journal of Forestry, Vol. 77, No. 9 (1979), 558-562. The forests of central and southern New England have been successively shaped by exploitation, abandonment, and natural recovery. Now they are well stocked with mediocre trees, are predominantly in small tracts, and are threatened by heavy cutting for fuelwood and by further subdivision. Under social and economic policies adapted to the region, however, and with foresters contributing new ideas and practices, these stands can become a demonstration of multiple-use management on nonindustrial private holdings.

11. IB2 HAYNES RICHARD W., ADAMS DARIUS M. "Possible Changes in Regional Forest Product Output and Consumption During the Next 50 Years." Forest Products Journal, Vol. 29, No. 10 (1979), 75-80. Projections of future developments in the major North American forest products markets, using an integrated approach which combines a spatial econometric market model with a biological growth model of the resource base.

12. IB2 SHEFFIELD RAYMOND M. Forest Statistics for South Carolina, 1978. USDA Forest Service Bulletin SE-50 (1979). Statistics on ownership of forest land, volume of growing stock, and timber removal.

13. IB2 SHEFFIELD RAYMOND M., HUTCHISON JOANNE. Forest Statistics for the Southern Coastal Plain of South Carolina, 1978. USDA Forest Service Resource Bulletin SE-49 (1979). Statistics on ownership of forest land, volume of growing stock and timber removals.

14. IB2 SMITH LEE. "The Neglected Promise of Our Forests." Fortune, VOL. 100, No. 9 (1979), 111-124. The U.S. runs a huge trade deficit in forest products. Our vast stands of trees and ability to convert them cheaply to lumber or paper could make us the export leader.

15. IB3 CHO EUNG HYOUK et al. Report on the Forest Administration Research. Office of Forestry, Rep. of Korea, 1979. In Korean. Long-term measures for the development of Korean forest resources, foreign countries' forestry policies, and the importance of environmental forests were reviewed.

16. IB3 ELLIOTT G. K. "The Uses of Industrial Softwood in Britain." Irish Forestry, VOL. 35, No. 2 (1978), 92-108. Industrial softwood = coniferous sawnwood. Reviews the nature and development of the

British resource, the structure of the sawmilling industry in Britain; examines the end users of all industrial softwood in Britain and quantifies the present market place and future potential for British softwoods; and examines the market structure for industrial softwoods in order to identify the technological and institutional characteristics which the British sector must meet to be commercially competitive with imports.

17. IB3 GALLAGHER L.U. "Irish Timber and the Sawn Wood Trade." Irish Forestry, 35, No. 2 (1978), 85-91. The status of Irish timber is outlined in the context of the world and European trade. Small size of the industry means that changes of supply can have a considerable effect on production. Present sawlog supply is given in relation to quantity and method of obtaining it. Requirements of the market and some indications of the size and competitiveness of the home grown sawn timber industry are presented, concluding with a brief comment on its future.

18. IB3 KUUSELA KULLERVO. "Sampling of Forest Resources from the Viewpoint of Resource Utilization and Environmental Management on the National and International Level." International Union of Forest Resource Organizations, Subject Group S4.02. Proceedings of the June meeting, Nancy, France, 1973. Vol. 2 published by Forest Research Institute. (1974).

19. IB3 KUUSELA KULLERVO, SAKARI SALMINEN. "Forest Resources in Finland 1971-1976 by Counties." Folia Forestalia, 380 (1979), 22. In Finnish with an English summary.

20. IB3 MAKRIS K. Forestry and Forest Problems in the Area of EEC and the Admission of Greece. Aristotelian University of Thessaloniki, School of Agriculture and Forestry, 1978. In Greek with English summary. The problems and consequences of admission of Greece in the EEC are analyzed.

21. IB3 PLAISANCE G. French Forests. Paris: Editions Denoel. (1979), 373 pp. In French. A book for the general reader that covers the whole field of forests and forestry in France from history to the future of forestry and timber in France. There are 23 appendices presenting data on a variety of aspects, a bibliography and suggestions for further reading.

22. IB3 SIMONS TOM "The Role of Architects and Foresters in Shaping the Forest Landscape in Finland." Silva

Fennica, 2 (1979), 170-176. In Finnish with an English summary.

23. IB3 FORESTRY STATISTICS, 1978. Office of Forestry, Rep. of Korea. 1978. In Korean and English. Forest land area, growing stock, reforestation, forest protection and industries in the Republic.

24. IB4 BAUMGART I. L. "The Role of Forestry in New Zealand at the Turn of the Century." New Zealand Journal of Forestry, Vol. 24, No. 1 (1979), 37-46.

25. IB5 FENTON R. "Comparisons of Chilean and New Zealand Radiata Pine Plantations." New Zealand Journal of Forestry, Vol. 24, No. 1 (1979), 13-24. Factors favoring development of radiata pine plantations in Chile are an abundant supply of cheap land of fairly good site quality and easy topography, that is rarely more than 120 km from ports. Export destinations and products are relatively diverse. Top management calibre is high. The competitive position of Chile in radiata pine markets will be formidable if present trends and planting rates are continued.

26. IB5 GUPTA TIRATH. "Effective Management of Natural Resources for Sustained Change in Rural India." Paper presented at the seventeenth International Conference of Agricultural Economists, Banff, Alberta, Canada. Sept. 1979. Some of the problems are: inadequate statistics on existing forest land and the lack of interest in forest management that India has due to its agricultural status.

27. IB5 MURCA PIRES J. The Forest Ecosystems of the Brazilian Amazon: Description, Functioning and Research Needs. Rome: FAO, (1978). FAO UNESCO/UNEP report on Brazil's Amazon region, the forest ecology, flora, phytogeography, vegetation structure, and forest production.

28. IB5 MYERS NORMAN. "Tropical Rain Forests: Whose Hand Is on the Axe?" National Parks and Conservation Magazine, Vol. 53, No. 11 (1979), 9-13. Much of the world's tropical moist forests will be destroyed by the end of this century.

29. IB5 SPEARS JOHN S. "Can the Wet Tropical Forest Survive?" Commonwealth Forestry Review, Vol. 58, No. 3 (1979), 165-180. An Address given at the Annual General Meeting of the Commonwealth Forestry Association, April 10, 1979. Summarizes what leading experts have said during the 1970's about the

survival of tropical forests, and interprets, from a practical forester's point of view, how their conclusions might affect forestry management and investment decisions in the 1980's.

30. IB5 TAYLOR GEORGE F II. Forests and Forestry in India: An Introductory Bibliography. Vance Bibliographies, Pub. Admin. Series, number P-338. (1979). Contains a selected list of sources relating to forests and forestry on the Indian subcontinent. Although the primary focus is India, a number of the works have as their focus Pakistan, Bangladesh, and Burma as well as India. Forestry has been broadly defined to include both the natural and social science components of forest resource management.

31. IB5 TAYLOR GEORGE F II., TAYLOR BETH ANN. "Forestry in the Sahel: A Selected bibliography of Source Materials Relating to Arid Zone Forestry and the Southern Fringe of the Sahara." In A Current Bibliography of African Affairs, Vol. 12, No. 1 (1979-80), 33-49. A selective list of sources on forestry in the Sahelian region of Africa plus Nigeria and the Sudan. Also included are selected works on arid zone forestry, forestry development, and tropical forestry.

32. IB5 WHITMORE T.C. The Forest Ecosystems of Malaysia, Singapore, and Brunei: Description, Functioning, and Research Needs. Rome: FAO, (1978). FAO UNESCO/UNEP report including ecology, flora, forest types, and ecosystem.

33. IC KISHINE T. "What Are the Causes of the Confusion of Japanese Forest Policy." Ringyo Gijyutsu, No. 435 (1978), 2-6. In Japanese. The two main causes are the legal confusion caused by the antimony between two main laws which support Japanese forest policy and the political confusion caused by the import policy of foreign lumber under the wrong price theory.

34. IC PARK TAI SIK. "The Improvement of Public Forest Management." Bulletin of the Seoul National University Forests, No. 14 (1978), 56-70. In Korean with an English summary. To improve policy-making in Korea, a survey was made on the distribution of public forests, forest and management status, financial situation, and the necessity of public holdings.

35. IC Second 10-Year Forest Development Plan, 1979-1989. Office of Forestry, Rep. of Korea, (1979). In

Korean. Reforestation, protection, development of environmental forests, supply of forest products, forestry research and extension works, and government assistance programs have been made for the period of 1979-1989.

36. ID1A CONNELL WILLIAM K., HOLMER ALAN F.. "How Tax Bills Pending in Congress Would Affect Timberland Owners." Forest Farmer, 39, No. 2 (1979), 15, 26, 28-29. Examines three federal legislative tax proposals of interest to timber owners: (1) repeal of the carry-over basis rule, (2) reforestation tax incentives, and (3) estate tax relief.

37. ID1B BRETT FRED. "Greenbelt Law Promotes Productivity through Realistic Tax Treatment." Forest Farmer, Vol. 39, No. 2 (1979), 13, 31, 34. Florida system calculates tax values on productive capacity of the land, current values and costs.

38. ID1B FIELD DAVID B. "Needed - The Productivity Approach to Forest Taxation." Northern Logger and Timber Processor, Vol. 28, No. 3 (1979), 12-13, 30, 32-34. A statement to the Taxation Committee of the Maine legislature on April 18, 1979, on bills relating to the Tree Growth Tax Law. States that the general, ad valorem, property tax is inherently unfair to forest properties by comparison with other income-producing properties.

39. ID1B KERR ED. "Equitable Timber Taxes for Louisiana Landowners." Forests and People, 29, No. 3 (1979), 7, 36-38.

40. ID1B MCDONELL NORMAN A. "Impact of Property Tax Systems on Forestry Decisions." Forest Farmer, Vol. 39, No. 2 (1979), 12,29. Only a few southern states have progressed to taxing land exclusive of timber, treating forest lands the same as other croplands.

41. ID1B SUTHERLAND CHARLES F. Forest Property Taxation in Eastern Oregon. Extension Circular 898, Oregon State University, (1978).

42. ID1B SUTHERLAND CHARLES F. The Forest Property Tax Law in Western Oregon. Extension Circular 888, Oregon State University, (1978).

43. ID1C BEHLEN DOROTHY "Timber Taxes and the Private Landowner." American Forests, Vol. 85, No. 9 (1979), 34-37. Explains laws, legal terms, IRS

forms, and provides references for more information.

44. ID1C TEDDER PHILIP L., SUTHERLAND CHARLES F. "The Federal Estate Tax: A Potential Problem for Private Nonindustrial Forest Owners in the South." Southern Journal of Applied Forestry, Vol. 3, No. 3 (1979), 109-111. As land and timber prices continue to escalate due to inflation and real cost increases, the federal estate tax could ultimately change forestland ownership patterns of the southern US. In some cases, only a fraction of the original tract may be passed to a surviving family member, with the balance sold to pay the estate tax. However, sound management of financial and forest resources could offset this problem. Alternatives to harvesting timber to fund the tax are presented.

45. ID2 IADAROLA ANGELO A. Federal Condemnation of Private Forestlands-the Search for "Just Compensation." Society of American Foresters 1979 National Convention. 103 pp. From the Economics and Policy Working Group Technical Session.

46. ID4 MAGANCK RICHARD A., GOEBEL J. MARTIN. "Shifting cultivation: Problems for parks in Latin America." Parks, 4, No. 2. (1979), 4-8. In order to conserve forested areas in Latin America the long-standing cultural practice of "Milpa" (a devastating agricultural system) and spontaneous settlement or illegal occupation of park lands must be changed.

47. IE KUUSELA KULLERVO. "Evaluations in Selecting and Controlling a Research Project and Estimating the Applicability of Its Results." Proceedings of the third meeting of subject group S6.06: Management of Forest Research, 5-9 Sept. 1977, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, England. (1978), 54-61.

48. IE LEIKOLA MATTI. "The Role of Forestry Research in Guiding Forest Policy and Management in Finnish Lapland." Silva Fennica, 1A (1979), 50. In Finnish with an English summary.

49. IE PAILLÉ GILBERT. "The Responsibility for Forest Research." The Forestry Chronicle, Vol. 55, No. 4 (1979), 148-150. The general public, researchers and their employers are considered to be responsible for forest research in Canada. Some statistics are discussed in view of comparing the relative performance of industry, government, and university. A common goal is suggested as the best

way of improving the present and future situation.

50. IE REUNALA AARNE. "CHOOSING THE OBJECTIVES OF FORESTRY RESEARCH." Proceedings of the third meeting of subject group S6.06: Management of Forest Research, September 5-9, 1977, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, England. (1978), 18-23.

51. IE YOUNGS R. L. "Forest Products Research in the Forest Service." Forest Products Journal, Vol. 29, No. 10 (1979), 56-60. Forest products research is aimed at increasing the options for more effective utilization of timber. It includes developing both theoretical and practical knowledge of wood as an engineering and industrial material, construction techniques, processing techniques, characterization of wood, protection of wood in use, and the related questions of harvesting, economics, and insect and disease effects.

52. IF ATHERTON GEORGE H. "Industry Appraisal of Forest Products Curriculum at Oregon State University." Wood and Fiber, Vol. 10, No. 4 (1979), 264-274. A survey was conducted to assess the relevance of the curriculum to the needs of the graduates. Questionnaires were sent to persons in forest products industry. Analyses were made for Oregon State University graduates in Forest Products as a group, and for groups sorted by management level, type of operation within the industry, and age level of respondents.

53. IF CARLAW R. "An Impartially Biased Look at Training and Education." Scottish Forestry, Vol. 33, No. 3 (1979), 173-179. An attempt to open a dialogue on just what Scotland should be producing in the way of forest supervisors. It suggests that the present system has many inadequacies.

54. IF GUILLARD J., PARDÉ J. "The Training of Forest Officers in Other Countries." Revue Forestière Française, Vol. 32, No. 2 (1979), 163-164. In French.

55. IF LANTICAN D.M. Environmental Content of Forestry Education. Rome: FAO Forestry Dept. (1978). In English, Spanish, and French. Meeting paper from southeast Asia dealing with forestry training, education, forest ecology, and environment.

56. IF MIKOLA P. Environmental Content of Forestry Education in Europe. Rome: FAO, Forestry Dept.

(1978). In English, Spanish, and French. Meeting paper dealing with European forestry training, education, forest ecology, and environment.

57. IF STEIGUER J.E., DE MERRIFIELD R.G. Forestry Environmental Education in North America. Rome: FAO, Forestry Dept. (1978). In English, Spanish, and French. Advisory committee of Forestry Education meeting paper on North American forestry training, education, forest ecology, and environment.

58. IH HII GREGORY S.C. "An Introduction to Pollution in the Forest Products Industry." The Malaysian Forester, Vol. 42, No. 1 (1979), 59-66. Various aspects of a pollution control program, including the need for such a control, the requirement to prepare an environmental impact statement for a new industrial project, the self-monitoring of pollution levels, the availability of pollution abatement technology and the approximate abatement cost, are briefly discussed.

59. IH MINCKLER LEON S. "The Challenge of Forest Management." National Parks and Conservation Magazine, Vol. 3, No. 9 (1979), 16-19. Criticism of current forestry practices and improvements suggested.

60. IH PÄRNÄNEN ANU. "Ecological Effects of Different Land Uses and Management Practices on Boreal Forest Landscapes - A Man and the Biosphere program Project 2 Seminar." Silva Fennica, 2 (1979), 131.

61. IIA1 STEVENS JOE B. "Six Views about a Wood Products Labor Force, Most of Which May Be Wrong" Journal of Forestry, Vol. 77, No. 11 (1979), 717-720. The prospect of a declining timber supply in the Douglas-fir region suggests that assumptions about labor force adaptability will be used strategically in the political process. In Oregon, the labor force situation turns out to be quite different from what is commonly held or assumed. In particular, high labor turnover is found to be a rational adaptation to the nature of the industry.

62. IIA3 MAJOR E.W. "Modern Trends in Training within the Pulp and Paper Industry." Appita, Vol. 32, No. 5 (1979), 381-384. Training requirements are reviewed for different staff levels with eventual focus on basic training for operation and maintenance personnel at the shop floor level. Programmed learning techniques, the task of the instructor, and the need for corporate commitment to training is

covered.

63. IIB2A MCELVEY P.J. "Consulting the Owners." Australian Forestry, Vol. 42, No. 1 (1979), 3-7. Discusses the relationship between the public forester and the public: the reasons for consultation, the method of consultation and what to do with the results.

64. IIB3A CLARKE P. J. "Support Systems for Private Forestry in Great Britain." Journal of Forestry, Vol. 77, No. 9 (1979), 592-595. Financial incentives to private woodland owners in Britain have proved successful in stimulating a large expansion of private planting in the years since World War II.

65. IIB3A HU SHIH-CHANG, MCDERMID ROBERT W., SHILLING CHARLES L., OWENS RICKY D. "Recreational Use Policies of Large Forest Landowners in Louisiana." LSU Forestry Notes No. 127, (1979). Results of a survey of owners or agents of large (5,000 acres or more) forest acreages in Louisiana. A similar study of landowner policies toward public use was made in 1964 (Lewis and McDermid, 1965), thus the current study was designed to determine any policy changes during the ten year period, as well as to seek out the underlying reason for important changes in policy or opinion.

66. IIB3A MORIARTY F.J. "As the Grower Sees It." Irish Forestry, Vol. 35, No. 2 (1978), 109-114. Private Irish landowner's view of forestry. Covers history, productivity, quality, financial return, marketing, and prospects for the future.

67. IIB3C GREENE JOHN L. "The Increment Contract." Southern Journal of Applied Forestry, Vol. 3, No. 3 (1979), 82-85. Long-term timber management contracts give forest industry firms most of the advantages of fee-simple land ownership and avoid most of the disadvantages. The contract offers the owners income that is immediate, continuous, protected from inflation, and taxable as capital gains.

68. IIB3C HALE JAMES A. "Drawing Landowners into Management." Northern Logger and Timber Processor, Vol. 28, No.3 (1979), 22. Stresses the communication problems between professional forestry management people and the non-industrial private landowner.

69. IIB3C HOLLEY LESTER. "Grow a Crop of Moneytrees."

American Forests, Vol. 85, No. 10 (1979), 18-19, 50, 52-54. Details on how the nonindustrial private landowner can make money by managing his woodlands.

70. IIB3C PIMM R.M. "Glenfeshie: An Achievement in Conservation." Scottish Forestry, Vol. 33, No. 3 (1979), 180-185. Fifteen years ago Glenfeshie Estate was silviculturally a derelict area. Over the centuries the tree cover had been removed and almost total devastation was completed during the two world wars. This article records the planning and successful first actions that have been taken to halt and reverse this destruction and comments on the future of a long-term experiment in conservation.

71. IIC3 GÖTSCH H. "Forest Land-Use Planning in Austria." Centralblatt für das Gesamte Forstwesen, Vol. 96, No. 1 (1979), 43-56. In German with an English summary. The planning of forests and connected areas must adjust to aims provided by practical forest policy. Economical efficiency, forest protection, public welfare, and recreation must be considered.

72. IID1 RIIHINEN PÄIVIÖ. "Forestry Investment Appraisal in Finland OECD Cooperative Action Program. " Joint Activity on Forestry Investment Project Appraisal.Preliminary Experts Meeting in Paris, December 12-13, 1978. Published by OECD, Technical Cooperation Service.

73. IIIA1 BOROUGH C. J. "Agroforestry in New Zealand - the Current Situation." Australian Forestry, Vol. 42, No. 1 (1979), 23-29. Agroforestry, combining pasture management with open plantations of radiata pine, is increasing as a form of land use in New Zealand. Research into the interactions between pasture, animals and trees is being undertaken by several government departments and private organizations. Results to date have shown that agroforestry is technically feasible and further research, to provide the data that will allow full economic assessment to be made, is in progress.

74. IIIA1 HICKS LORIN L., ELDER JAMES M. "Human Disturbance of Sierra Nevada Bighorn Sheep." Journal of Wildlife Management, Vol. 43, No. 4 (1979), 909-915. The Mt. Baxter herd is not declining due to recreational use of the area, however, increased recreational use might adversely affect bighorns. Management recommendations are to continue current regulations with increased

restrictions on off-trail hiking and alteration of the Baxter Pass trail to route people away from areas intensely used by sheep.

75. IIIA4 CLEMENTS RALPH W. Gum Producers Can Improve Quality of Gum Marketed and Get Higher Prices. USDA Forest Service Research Note SE-274, (1979). Guidelines are given for improving the quality by eliminating impurities and marketing cleaner gum.

76. IIIA5A BAMMEL EUGENE. "Urbanism and Forest Recreation." West Virginia Agriculture and Forestry, Vol. 7, No. 3 (1978), 1-5. Discusses the influence of urban life on the recreation preferences of Americans, and the implications for forest recreation planning.

77. IIIA5A BROCKMAN C. FRANK, MERRIAM LAWRENCE C. JR. Recreational Use of Wildlands, 3rd ed. New York: McGraw-Hill, 1979. An introductory text for university students, it continues to follow the orthodox historical-legal approach to public administration except for the two special chapters on sociology and economics, which were also in the second edition. The book describes the importance of recreation and leisure in the public use of wildlands, the historical evolution of recreational land use, and socio-behavioral relationships. It includes the recreation resources of the various governmental agencies and the lesser contribution of private lands. The work also covers economic relationships, tells how to manage for recreation opportunities, and concludes with a chapter on the international use of wildlands for recreation. Each of these topics is developed in one or more chapters, which all show evidence of updating since the 1973 edition. (From a review by Ben W. Twight in Journal of Forestry, Vol. 77, No. 9, 1979.)

78. IIIA5A "Forestry and Outdoor Recreation." Sveriges Skogsvårdsförbunds Tidskrift, Vol. 77, No. 1 (1979), 113pp. In Swedish. A special issue including an introduction by G. Segebaden from a conference in Uppsala in December 1978. Some of the papers: (1) Kardell L. "Grandfather's Out-door Recreation - if He Had Such a Thing." (2) Hultman S. "The Recreation Forest in the Eyes of the People." (3) Björkhem U. "Do We Have Areas Suitable for 'Mobile' Outdoor Recreation?" (4) Norling I. "The Social Value of Outdoor Recreation - A Few Pointers." (5) Åstrand P. O. "Outdoor Recreation as a Health Service." (6) Åkesson S. "Balancing the Requirements of Forestry and Conservation."

79. IIIA5E BETANCOURT JORGE A., HANSON DONALD, WILD KEN. "Honduras' La Tigra: Public Benefits through Conservation." Parks, Vol. 4, No. 2 (1979), 9-11. La Tigra, an area of 7571 hectares which includes a virgin cloud forest, is 25 kilometers northeast of the capital of Honduras and is soon to be the first national park of Honduras.

80. IIIA5E FOSTER JOHN "A Park System and Scenic Conservation in Scotland." Parks, Vol. 4, No. 2 (1979), 1-4. Covers the political beginnings of interest in public recreation, the establishment of the Countryside Commission for Scotland, the Commission's strategy for comprehensive recreational facilities, an explanation of the park system and the conservation of scenic areas.

81. IIIA5E IRLAND LLOYD C. Wilderness Economics and Policy. Lexington, Massachusetts: Heath & Co. (1979), 225 pp. Introduces concepts of economics useful in interpreting the justifications for preservation of wilderness areas, in analyzing the opportunity costs of wilderness preservation, and in studying management policies. Existing wilderness policies and unsettled policy issues are also discussed.

82. IIIA5E MACKINTOSH E.E. Impact of Recreation on Vegetaton and Soils in Rushing River Provincial Park, Ontario. Report O-X-290 published jointly by Great Lakes Forest Research Centre, Canadian Forestry Service, Department of the Environment, and Provincial Parks Branch, Ontario Ministry of Natural Resources. (1979). Based on research conducted between 1972 and 1977.

83. IIIA5E MOLLOY L.F. "The Role of State Forests in a New Zealand Wilderness System." New Zealand Journal of Forestry, Vol. 24, No. 1 (1979), 101-107.

84. IIIA5E STANKEY GEORGE H., BADEN JOHN. Rationing Wilderness Use: Methods, Problems, and Guidelines. USDA Forest Service Research Paper INT-192, (1977). Explores advantages and disadvantages of five systems for rationing wilderness use: reservation, queuing, lottery, price, and merit. Offers principles and guidelines for selecting the system or combination of systems that will protect wilderness values with minimum inconvenience to the public. Recommends monitoring and evaluation of rationing programs.

85. IIIA5G BRUSH, ROBERT O. "The Attractiveness of Woodlands: Perceptions of Forest Landowners in

Massachusetts." Forest Science, 25, No. 3 (1979), 495-506. Data indicated that (1) forest landowners perceive differences in the attractiveness of stands on the basis of certain spatial qualities; (2) large, enclosed spaces and spaces created by thinning well-stocked stands are more attractive than unbounded openings and dense, overstocked stands; (3) forestry students agree with the landowners in their ratings, and (4) some photographs did not accurately represent the attractiveness of the stands.

86. IIIA5G BUHYOFF GREGORY J., RIESENMAN MICHAEL F. "Manipulation of Dimensionality in Landscape Preference Judgments: a Quantitative Validation." Leisure Sciences, 2, Nos. 3&4 (1979), 221-238. Results of statistical tests indicate that dimensionality can be manipulated and that esthetic impacts can be measured as a result of changes in a specific landscape dimension.

87. IIIA5G BOZSNYAY Z. "The Term, 'Mixed Forest' and the Structure of Forest Stands as Conceived by Visitors of Forest Resorts." Forst-wissenschaftliches Centralblatt, Vol. 98, No. 4 (1979), 222-233. In order to determine visitor preference regarding mixed types of forest stands and their structure, one thousand persons visiting the Konigsforst near Cologne were interviewed. In addition to verbal questioning, schematic drawings of typical composition types were used.

88. IIIA5H AMMER VON U., TIETZE HOLDE. "Riding in the Open Landscape." Forst-wissenschaftliches Centralblatt, Vol. 98, No. 4 (1979), 178-194. This study, conducted during May 1978 in the Forstenrieder Park, one of the most important recreation areas near Munich, deals with the problems arising from conflicting aims between riding on the one side, and farming, forestry, and hunting, on the other side.

89. IIIA5H CANON LANCE KIRKPATRICK, ADLER STEVEN, LEONARD RAYMOND E. Factors Affecting Dispersion of Backcountry Campsites. USDA Forest Service Research Note NE-276, (1979), 6pp. Perception of risk and convenience determined the dispersion of backcountry campsites in a study done at the Great Gulf Wilderness Area in the White Mountain National Forest of northern New Hampshire.

90. IIIA5H LEATHERBERRY EARL C. Minnesota Canoe and Kayak Owners: Their Characteristics and Patterns of Use." USDA Forest Service Research Paper NC-171. (1979). Provides information about Minnesota canoe and kayak

owners' socioeconomic characteristics, their experience with canoeing and kayaking, and the characteristics of use. Implications for management are also presented.

91. IIIA5H MÖSSMER R., AMMER VON U., HARTMANN R. "Knowledge Gained During the Construction and Use of the Bridle-Path Syste m in the Forstenreider Park, Munich." Forst-wissenschaftliches Centralblatt, Vol. 98, No. 4 (1979), 195-209. In German with an English summary. The confinement of riders to a few paths causes the destruction of those paths. Numerous inquiries about the construction of an all-weather bridle-path in the Forstenreider Park have shown that similar problems exist in other urban regions. The knowledge gained during construction and use, especially of the experimental sections, is described and recommendations for the development of other bridle-path systems are given.

92. IIIA5H PLOCHMANN R. "Comments on Riding in Forests from the Point of Forest Policy." Forst-wissenschaftlichs Centralblatt, Vol. 98, No. 4 (1979), 172-178. New problems with regard to the increasing use of forests for horseback riding are presented. The development of regulations within forest and nature protective legislaton is dealt with. The conflicts between riders, other recreationists and forest owners are described.

93. IIIA5H VOLK H. "Opinions on Riding and Cycling in the Forests." Forst-wissenschaftliches Centralblatt, Vol. 98, No. 4 (1979), 210-222. In German with an English summary. The opinions of 7,480 visitors to a fair at Stuttgart in 1977 were used to determine user preference concerning riding and cycling in the forests.

94. IIIA5I GÖTSCH H. "Determining the Recreational Value and Demand for Forest Recreation Areas." Allgemeine Forstzeitung, Vol. 90, No. 4 (1979), 86-91. In German with an English abstract. A critical appraisal of work on methods of calculating the recreational value of forests in financial terms: both "direct" and "indirect" methods used in these works are shown to be inaccurate. The second part of the paper deals with determining the need and demand for forest recreational facilities, using a component model with 3 groups of determining factors: demographic; occupational; and economic.

95. IIIA5I SINDEN JOHN A., WORRELL ALBERT C. Unpriced Values - Decisions without Market Prices. New York:

John Wiley & Sons, (1979), 511 pp. Concerns the problem of placing comparative values on benefits and costs that have no market value, e.g., scenic beauty, wildlife preservation, human health, and outdoor recreation.

96. IIIA6 DE WALLE DAVID R., FARRAND EDWARD P. Windbreaks and Shade Trees, Their Use in Home Energy Conservation. Penn State Univ. Agric. Extension Service Special Circular 245, 8pp.

97. IIIA7 ARTHUR LOUISE M., WILSON W. ROBERT. "Assessing the Demand for Wildlife Resources: A First Step." Wildlife Society Bulletin, Vol. 7, No. 1 (1979), 30-34. In three recent surveys of the general public's and sportsmen's attitudes toward wildlife and wildlife management, respondents indicated that nonconsumptive uses of wildlife resources were more important and enjoyable to them than consumptive uses such as hunting and fishing. Hunters and fishermen expressed relatively greater interest in viewing wildlife and enjoying wildlife habitats than in bagging game or filling a limit.

98. IIIA7 BAPTISTE MARY E., WHELAN JAMES B., FRARY ROBERT B. "Visitor Perception of Black Bear Problems at Shenandoah National Park." Wildlife Society Bulletin, Vol. 7, No. 1 (1979), 25-29. Camp-raiding black bears (Ursus americanus) at Shenandoah National Park have caused extensive property damage and threatened serious injury to visitors. To determine a public acceptance level for noninjurious human/bear contact, a questionnaire dealing with knowledge, judgement, and attitudes concerning black bears was administered to 688 visitors representing 5 user types at the park. Most respondents knew that visitor carelessness caused the most bear problems. About half believed that camp-raiding bears posed a problem serious enough to justify their removal. Visitors were eager to see bears, but were generally unwilling to risk property damage or minor injury to have that opportunity.

99. IIIA7 CAUBLE CHRISTOPHER. "Glacier's Beleaguered Grizzlies." National Parks and Conservation Magazine, Vol. 53, No. 8 (1979), 22-25. Glacier Park must protect bears from extinction and people from injuries caused by bears.

100. IIIA7 MCCLELLAND B. RILEY, FRISSELL SIDNEY S., FISCHER WILLIAM C., HALVORSON CURTIS H. "Habitat Management for Hole-Nesting Birds in Forests of Western Larch and Douglas-fir." Journal of Forestry, Vol. 77,

No. 8 (1979), 480-483. Stands with old growth supported the highest density and diversity of hole-nesters. On commercial forests, managers should maintain units of old growth and prepare silvicultural prescriptions that will provide continuing replacement in the future.

101. IIIA7 O'LEARY JOSEPH T., WEEKS HARMON P. "Using Recreation Consumer Data in Developing Wildlife Management Strategies." Wildlife Society Bulletin, Vol. 7, No. 2 (1979), 98-103. Use of readily available data on Indiana recreationists involved in 6 consumptive and appreciative activities indicates they are similar in socio-economic background and share involvement in all of the activities considered. This illustrates that management trade-offs can be formulated that benefit the broad array of recreationists, rather than just selected groups.

102. IIIA7 SOUTIERE EDWARD C. "Effects of Timber Harvesting on Marten in Maine." Journal of Wildlife Management, Vol. 43, No. 4 (1979), 850-860. The marten's decline in its eastern range has been attributed to destruction of forests by logging and fire. The findings of a study on the effects of partial timber harvesting and commercial clear-cutting on a population of marten provide a foundation on which to plan management practices that affect the eastern marten.

103. IIIA8 KELLOMÄKI SEPPO. "Benefits of Forests in Urban Environments." Silva Fennica, 2, (1979), 156-165. In Finnish with an English summary.

104. IIIA8 LAURIE IAN C. Nature in Cities. New York: John Wiley & Sons. (1979), 428 pp. Laurie states the purpose of the book as an ". . . attempt to bring together the thoughts of the professional specialists whose work is concerned with the relationships between man and nature in cities, and to review the knowledge that they hold on various aspects of these relationships." The environmental designers and scientists contributing to this book are from the U.S. and Europe.

105. IIIA8 LITTLE SILAS Urban Foresters Notebook.. USDA Forest Service General Technical Report NE-49. (1978). Some of the papers contained in the notebook: (1) Heisler Gordon M. "Effects of Trees and Woodlands on Microclimate and Home Conditioning Costs." (2) Dochinger L.S., Jensen Keith F., Patton Roy. "Trees and Woodlands Reduce Air Pollution." (3)

Lempicki Edward A. "Estimating and Using Urban Wood Waste." (4) Parker Johnson. "Effects of Unfavorable Soil Conditions on Urban Trees." (5) Watt Richard F. "Shade-tree Selection." (6) Corbett Edward S. "Municipal Watershed management." (7) Moll Gary. "Urban Forest Planning."

106. IIIA8 MASSEY JOSEPH G., MURPHEY WAYNE K., DEWERS ROBERT S. "The Economics of Urban Tree Inventory Systems: Fort Worth, a Case Study. Journal of Arboriculture, Vol. 5, No. 10 (1979), 233-235. Costs associated with establishing a computerized urban tree inventory system are estimated using data developed during the establishment of METRIS (an urban tree management information system) in Fort Worth. Economic efficiency measures are identified and applied to system development. The question of economic feasibility for the development and use of such systems is addressed.

107. IIIA8 MILLER BETTY. "Seattle's Freeway Park." American Forests, Vol. 85, No. 10 (1979). 29-31, 46, 49-50. A six-acre park which includes a 32 foot waterfall, is situated over Seattle's busiest highway where it masks traffic sounds and smells. The park has replaced the land used by the freeway by occupying the space above it through air rights.

108. IIIA8 REY-LESCURE ERIC. Evaluating the Recreation Potential of Urban Forests. Can. Centre Rech. For. Laurentides, Ste Foy, Quebec. LAU-X-32E, (1978). Describes a survey method of the recreational potential designed for evaluating the Montreal Urban Community forests. Brief results are presented and a critical analysis of the method's characteristics is proposed for potential users.

109. IIIA8 SHAFER ELWOOD L., MOELLER GEORGE H. "Urban Forestry: Its Scope and Complexity." Journal of Arboriculture, Vol. 5, No. 9 (1979), 206-209. Urban foresters need to know: the benefits of urban forests, factors that ifluence those benefits, means to manage vegetation to provide the benefits, and how to integrate urban forestry with the total urban planning and development process.

110. IIIA8 STERNGOLD JAMES. "Central Park Imperiled." American Forests, Vol. 85, No. 10 (1979), 32-35, 68-70. Covers the backgrcund of the original park plans, the reasons for its current state of decay and the plans for revitalizing and maintaining it.

111. IIIB1 HAHN DAVID W., BARE BRUCE. Uneven-aged Forest Management: State of the Art (or Science?)." USDA Forest Service General Technical Report INT-50, (1979), 18pp. Examines some important historical factors that have caused widespread preference of the even-aged management system over the uneven-aged. Major decisions facing forest managers interested in applying uneven-aged management are defined and a review is made of techniques traditionally used, or recently proposed, for use in making these decisions. Problem areas needing further research and development are identified.

112. IIIB1 HILLIS W.E., BROWN A.G. Eucalypts for Wood Production. Adelaide: Griffin Press (1978), 434 pp. A collection of invited papers from thirty-three contributors summarizing the information now available on growing eucalypt wood under intensive management in Australia and the characteristics and uses of the existing product.

113. IIIB1 ZOBEL BRUCE. "Tropical Imports Are No Long-Term Threat to Southern Timber Growers." Forest Farmer, Vol. 39, No. 2 (1979), 6-7, 35-38.

114. IIIB2 ATKINSON G. T. "Improved Utilization=Better Regeneration and More Jobs?" Ontario Forests, Vol. 19, No. 1 (78/79), 15. Describes a program for removal of logging residue that creates jobs and improves the site better than more conventional means.

115. IIIB3 BOYER WILLIAM D. "Regenerating the Natural Long-Leaf Pine Forest." Journal of Forestry, Vol. 77, No. 9 (1979), 572-575. Natural regeneration by the shelterwood system is a reliable, low-cost alternative for existing long-leaf pine forests. The system is well-suited to the natural attributes and requirements of the species and may be attractive to landowners wishing to retain a natural forest and avoid high costs of site preparation and planting.

116. IIIB3 FENTON R., WATT G. R. "Costs of Growing Plantations of Caribbean Pine in Fiji and Radiata Pine in New Zealand." Commonwealth Forestry Review, Vol. 58, No. 3 (1979), 191-196. Costs of growing Caribbean pine in Fiji and Radiata pine in New Zealand are evaluated for projects which will both produce about 0.9 million m3 annually. Figures are based on 1976, and exclude the cost of land. Results gave growing costs of US $10.4 per m3 for Caribbean pine and US $15.1 for Radiata pine at ten

percent interest rates. These are encouraging for the tropical softwood, in comparison with one of the cheapest temperate alternatives, but costs are still high in comparison with many natural forest stumpages.

117. IIIB3 POPOVICH LUKE. "Reforestation: Paper Work and Real Work." Journal of Forestry, Vol. 77, No. 8 (1979), 490-493. Concerns the U.S.'s reforestation delinquency.

118. IIIB4 BRYAN RICHARD W. "Mechanized Logging Operation Makes Plantation Thinning Pay." Forest Industries, Vol. 106, No. 10 (1979), 34-35.

119. IIIB4 FUNK DAVID T., SCHLESINGER RICHARD C., POLAK DAVID J. "Value Gains from Selective Thinning of Juglans Nigra." USDA Forest Service, North Central Forest Exp. Station, (1979?) Selectively thinning from the extra trees planted to provide sufficient high quality stock can result in value gains for black walnut.

120. IIIB5 SMITH H.CLAY, TRIMBLE G.R. JR., DEBALD PAUL S. Raise Cutting Diameters for Increased Returns. USDA Forest Service Research Paper NE-445, (1979). Leaving the tree to grow from twelve to sixteen inches may increase the financial value of the tree by several times. This increase in tree value with increasing tree size and grade can be expressed in annual percent value increase.

121. IIIB5 TEDDER PHILIP L. "Oregon's Future Timber Harvest: The Size of Things to Come." Journal of Forestry, Vol. 77, No. 11 (1979), 714-716. Oregon's future timber harvest will decline in the short run and even off somewhat below current levels in the long run. Composition of the harvest volume, however, will change drastically. Trees harvested may average as small as fourteen inches at breast height and vary little in size.

122. IIIB5 TEDDER PHILIP L., KLETKE DARREL D., WEAVER G.H. Application of Timber RAM and ECHO: An Oklahoma Example. Agric. Exp. Station, Oklahoma State Univ. Research Report P-775. (1978). Illustrates two models used in timber rotation and allowable cut calculations. "Timber RAM" (resource allocation method) and "ECHO" (economic harvesting optimization). Timber RAM is a forest management tool utilized primarily by the Forest Service on the west coast and employs the linear programming package "MPSX" as its solution technique. ECHO is a model

employed by some large forestry-oriented corporations and uses a difference equation approach.

123. IIIC GARDNER R.B. "Some Environmental and Economic Effects of Alternative Forest Road Designs." From Transaction of the ASAE, Vol. 22, No. 1 (1979), 63-68.

124. IIID RANJITSINH M.K. "Forest Destruction in Asia and the South Pacific." Ambio, Vol. 8, No. 5 (1979), 192-201. Five million hectares of Asian forests are lost every year and millions more degraded by improper use. This destruction threatens the existences of millions of Asians who depend on the forests for their livelihood. Causes of the destruction and preventive action is discussed.

125. IIID1 DONOGHUE LINDA R., MCNAMARA EUGENE F. "Fire Prevention in the Northeastern States: Where Do We Stand?" Fire Management Notes, Spring (1979), 8-10.

126. IIID1 DOOLITTLE M. L., LIGHTSEY M. L. Southern Woods-Burners: A Descriptive Analysis. USDA Forest Service Research Paper SO-151 (1979). About forty percent of the South's nearly sixty thousand wild fires yearly are set by woods-burners. To design fire prevention programs, planners need to keep in mind that most woods-burning is supported by the community. The isolation of rural communities will require opening of new channels of communication before prevailing attitudes can be changed.

127. IIID1 EGGING LOUIS T., BARNEY RICHARD J. "Fire Management: A Component of Land Management Planning." Environmental Management, Vol. 3, No. 1 (1979), 15-20. Fire integration is the balancing of fire suppression, use, and prevention in an ecologically and economically sound manner in order to meet the management objectives for various resources. The Forest Service's changing view of fire as a threat to the natural resources of forest lands.

128. IIID1 GORTE JULIE K, GORTE ROSS W. Application of Economic Techniques to Fire Management - A Status Review and Evaluation. USDA Forest Service General Technical Report INT-53, (1979). The most common technique proposed is least-cost-plus-loss; the objective is to minimize the sum of all suppression and presuppression and resource losses. Another technique, benefit/cost analysis, differs only slightly. The benefits of fire control are the values protected less the resource losses; thus,

least-cost-plus-loss and benefit/cost analysis will yield similar results.

129. IIID1 LOTAN JAMES E. "Integrating Fire Management into Land-Use Planning: A Multiple-Use Management Research, Development, and Application Program." Environmental Management, Vol. 3, No. 1 (1979), 7-14. The Fire in Multiple-Use Management Research, Development, and Applications (RD&A) Program was initiated by the US Dept. of Agric. Forest Service, at the Northern Forest Fire Lab in Missoula to assist land managers. This paper explains what an RD&A program is; discusses its mission, goals, and approach to the problem; and tells why the approach involves federal laboratories, universities, and private research foundations.

130. IIID1 NELSON THOMAS C. "Fire Management Policy in the National Forests - A New Era." Journal of Forestry, Vol. 77, No. 11 (1979), 723-725. The policy for dealing with fires on National Forest System lands was changed in 1977 from control to management. After one year of implementation, the net effects of the new policy appear to be positive in terms of both economic and resource value.

131. IIID1 PHILLIOS CLINT, NICKEY BRAD. "The Concept of 'Spatial risk' and Its Applicatien to Fire Prevention." Fire Management Notes, Vol. 39, No. 4 (1978). Describes methods to develop wildland fire prevention programs containing spatial risk, the measure of the probability of wildfire occurring on a designated area of land.

132. IIID1 ROWELL M.N., CHENEY N.P. "Firebreak Preparation in Tropical Areas by Rolling and Burning." Australian Forestry, Vol. 42, No. 1 (1979), 8-12. In tropical areas dominated by tall annual grasses, firebreaks can be prepared by rolling and burning crushed grass while the surrounding grasses are still green and will not support a fire. This technique is being used to protect plantation areas.

133. IIID1 SIMARD A.J. "A Computer Simulation Model of Forest Fire Suppression with Air Tankers." Canadian Journal of Forest Research, Vol. 9, No. 3 (1979), 390-398. AIRPRO, a computer program based on the model, tests various combinations of air tanker resources and tactics and selects the one which minimizes suppression cost plus damage caused by fire.

134. IIID2 WADE DALE D., LONG MICHAEL C. "New Legislatien

Aids Hazard-Reduction Burning in Florida." Journal of Forestry, Vol. 77, No. 11 (1979), 725-726, 742. In 1977, the Florida legislature passed the Hawkins Bill authorizing the Division of Forestry to conduct prescribed burns in hazardous accumulations of wildland fuel on private holdings, provided that the owner does not object. Initial success of the statute suggests that it can serve as a model for other states with similar fuel-management problems.

135. IIID4 SULLIVAN THOMAS P. "Repopulation of Clear-Cut Habitat and Conifer Seed Predation by Deer Mice." Journal of Wildlife Management, Vol. 43, No. 4 (1979), 861-871. Conifer seed loss to rodents has been a problem to foresters since the early 1900's. This study has shown that poison baiting is futile owing to the rapid reinvasion by mice and their subsequent destruction of the seed supply. A biological control technique is needed for effective reforestation.

136. IIIE KILKKI PEKKA Timber Management Planning. University of Helsinki, Dept. of Forest Mensuration and Management. (1979), p. 105.

137. IIIE RUPRICH J. "Management Information Systems in Forestry." Lesnictví, Vol. 25, No. 8 (1979), 675-682. In Czech with English, German, and French abstracts. Describes a research program to build a comprehensive management information system for Czechoslovakian forestry. Implementation is planned for sometime after 1985.

138. IIIE STACHUROVA L. "Management Information Systems in the Soviet Union." Lesnictví, Vol. 25, No. 8 (1979), 691-698. Czech with English, German, and French abstracts. A summary of the forestry management information systems in the Soviet Union. Designs and results of the system in relation to expended material resources and labor are given along with an evaluation of the economic effectiveness of the system.

139. IIIE Society of American Foresters. Proceedings SAF Wisconsin-Michigan Section Meeting, March 9-10, 1978. (1979), 171 pp. Contains fifteen papers concerning: (1) economic factors that influence decisions in management, investment, and ownership of forest land; (2) evaluation methods which can be used in economic analysis and planning; (3) ideas for management alternatives which might be put into practice now.

140. IVA1B BLYTH JAMES E., WILHELM STEVEN, HAHN JEROLD T. Primary Forest Products Industry and Timber Use Minnesota 1973. USDA Forest Service Resource Bulletin, NC-39, (1979). Discusses recent Minnesota forest industry trends; timber removals for industrial roundwood in 1973; production and receipts in 1973 of pulpwood, saw logs, and other industrial roundwood products. Shows trends in pulpwood and veneer log production and compares saw log production in 1960 and 1973. Dicusses primary wood-using mill residue and its disposition.

141. IVA1B RUDERMAN FLORENCE K. Production, Prices, Employment, and Trade. USDA Forest Service, (1979), 57pp. First quarter 1979 report presents current information on the timber situation in Alaska, Washington, Oregon, California, Montana, Idaho, and British Columbia, including data on lumber and plywood production and prices; timber harvest; employment in forest products industries; international trade in logs, pulpwood, chips, lumber, and plywood; log prices in the Pacific Northwest; volume and average prices of stumpage sold by public agencies; and other related items.

142. IVA1B WELCH RICHARD L., BELLAMY THOMAS R. A Ten-Year Analysis of South Carolina's Industrial Timber Products Output. USDA Forest Service Resource Bulletin SE-48, (1979). The output of industrial timber products in South Carolina increased at an average annual rate of two percent between 1967 and 1976. Output from roundwood increased by 36 million cubic feet while the output from plant byproducts increased 47 million cubic feet. Pulpwood was the leading roundwood product in the state throughout the period, followed by saw logs, and then veneer logs.

143. IVA1C FRASER HUGH R. "Nordic Harvest, Sawmill Systems Aim for Low Costs." World Wood, Vol. 20, No. 9 (1979), 12-33. In the last two years the emphasis in Norway has been on smaller, lower cost harvesting machines. Many sawmills have been getting more from their circle saw systems than expected.

144. IVA1C HIRVENSALO REIJO. "Changes and Their Repercussions on the Finnish Forest Industry." Paperi ja Puu, 5, (1979), 387-393. In Finnish with an English summary.

145. IVA1C "Production and Exports of the Forest Industry in 1978." Finnish Paper and Timber, 2 (1979), 2-3. In Finnish.

146. IVA1C "Some Features of the Development in the Finnish Forest Industry During 1978." Finnish Paper and Timber, 4 (1979), 5-16.

147. IVA1E HAYGREEN JOHN, GREGERSEN HANS. "Integrated Utilization of Mixed Tropical Hardwoods: Example from the Philippines." Forest Products Journal, Vol. 29, No. 9 (1979), 15-20. The Paper Industries Corporation of the Philippines' complex at Bislig Bay in Mindanao includes a pulp and paper mill, two plywood plants, a veneer mill, a block board plant, and a sawmill. Because they utilize the complete range of species available and the large amount of wood used to generate energy, it is possible for PICOP to use essentially all of the wood and bark harvested from their lands.

148. IVA4 LINDHOLM HARVEY R. "Linear Programming: Fast Way to Classify Production Variables." Forest Industries, Vol. 106, No. 11 (1979), 54-55. A plywood linear programming model will permit the computer to specify optimum log mix, veneer thickness, combination of veneer and product mix. These decisions are based on input data which include limits of the types of logs available, machine capabilities and the amounts of each product that can be sold.

149. IVA4 SIERILÄ PENTTI. Corporate Planning and its Application in Forest Industry, Part II-III. Suomen Puutalous. (1979), 4-5. In Finnish.

150. IVB1 JANCO JOZEF. "Rationalization of Hardwood Logging." Lesnicky casopis, Vol. 25, No. 3 (1979), 221-228. In Czech with an English abstract. Production conditions in hardwood forests and the present situation of logging in both mature and immature stands. A projection to 1990 for hardwood logging is included.

151. IVB1 SAVILL P.S., MCEWEN J.A. "Timber Production from Northern Ireland 1980-2004." Irish Forestry, Vol. 35, No. 2 (1978), 115-123.
Sitka spruce will be the major species and the west of the Province will be the main producing area in later years. About two thirds of the total production will be of fourteen cm top diameter or more and could be used in sawmills.

152. IVB2 BERNDT ERNST R., COX ALAN J., PEARSE PETER H. "Estimation of Logging Costs and Timber Supply Curves from Forest Inventory Data. The Forestry Chronicle, Vol. 55, No. 4 (1979), 144-147. A procedure

whereby the costs of logging are estimated using simple econometric techniques. Necessary data can in principle be readily assembled through forest inventory procedures.

153. IVB2 GOULET DANIEL V., IFF RONALD H., SIROIS DONALD L. "Tree-to-Mill Harvesting Simulation Models: Where Are We?" Forest Products Journal, Vol. 29, No. 10 (1979), 50-55. As demand for wood and wood products increases, intensive and extensive harvesting practices are in more demand. Hence, all timber sites will have to be properly harvested. Computer simulation is one tool that can be used to address both present and future harvesting systems. Eight models are described with their properties collated into a cross-reference table.

154. IVB2 KETCHESON D.E. A Study of the Cost of Strip Cutting Black Spruce Stands in Northern Ontario. Canadian Forestry Service Report O-X-301, (1979), 23 pp. Discusses the impact of strip cutting on logging costs in clay belt and non-clay belt areas of Ontario.

155. IVB2 NORTON GARY R., PIXTON DENNIS T.. Pool log transfer system. School of Business, Oregon State University, 1979. Describes a cost system for allocating log development costs to different types of operating mills from a common source. The system was devised for use in the western United States.

156. IVB3B DU TOIT A. J. "The Harvesting of a Greater Part of the Forest Biomass: Branchwood." South African Forestry Journal, No. 109 (1979), 38-43. The harvesting of branchwood has been studied and implemented in North America, Northern Europe, and the USSR. Harvesting methods have been and are being developed to utilize this material which constitutes approximately 20 to 25 percent of the total forest biomass, and which is, many scientists believe, the logical source to augment existing wood fiber supplies in those parts of the world where shortages are envisaged. This paper discusses these methods as studied in Scandinavia and reported upon at a symposium on the subject in Finland.

157. IVB4 ARNAUTOVIC, B. "A Method for Optimizing the Mean Hauling Distance." Revue Forestière Française, 32, No. 2 (1979), 141-149. In French.

158. IVB4 LEINERT S. "The Use of Horses Owned by the Forest Administration for Extracting Small -sized Timber." Forsttechnische Informationen, Vol. 31, No. 1

(1979), 4-6. In German. The results of a study carried out by the Bavarian state forest administration in 1975 with fjiord horses to compare their performance in thinnings with a remote-controlled winch. Horses were cheaper to use and could work under more difficult conditions.

159. IVB4 MASSEY-REED PAUL. "Truck Travel Times in NSW Forests." Appita, Vol. 33, No. 1 (1979), 38-44. A computer program predicting travel time has been developed which can be used to : (1) simplify and improve the precision of stumpage appraisals, (2) influence road design and location to minimize the combined cost of truck travel time, road construction and maintencance, (3) more readily choose trucks whose design better fits each haulage situation, and (4) improve truck scheduling methods.

160. IVB4 STAMOU N., ANAGNOS N., PAPASTAVROU A. Improvement of Economic Results of Timber Use Industries with Respect to the Choice of the Areas Which Supply Timber as Raw Material. Aristotelian univ. of Thessaloniki, School of Agric. and Forestry, 1978. In Greek with English, German, and Italian summaries. The problem of reducing the transportation cost of wood from the point of view of timber-use firms is viewed with respect to the road net system, to the transportation distance and to the type of used transportation mean.

161. IVC1A WILLISTON ED. "Lumber Manufacture." Forest Products Journal, Vol. 29, No. 10 (1979), 45-49. A world-wide overview of the industry. Objectives of greater productivity and recovery are the result of the need to process larger volumes of smaller-diameter logs, a rise in log prices, rapidly escalating wages and taxes, and a rising demand for wood fiber on world markets.

162. IVC1A WONG T.M., SER C.S. "End-Uses of Malaysian Timbers I - Wooden Pallets." The Malaysian Forester, Vol. 42, No. 2 (1979), 96-100. Summarizes the properties required in timbers suitable for the manufacture of wooden pallets. A table of the Malaysian timber suitable for wooden pallet components is included.

163. IVC1A Planning of Sawmilling Industry in Africa. Proceedings of the Seminar on Planning of Sawmilling Industry held from May 15 to June 2, 1978 in Arusha, Tanzania. Published by National Board of Vocational Education. Forestry training program for developing countries. (1978), 437 pp.

164. IVC2A CLEPHANE THOMAS P. "Impact of Increasing Timber Values, Trends in Timber Demand and Prices, Changes in Industry Structure." Text of speech delivered to the Annual Convention of the American Pulpwood Association in Atlanta, Georgia, on March 20, 1979.

165. IVC2A GALSWORTHY A.M.J., LOOSLEY D.P.,VENESS J.C., WILLIAMS W.R. The Outlook for Printing and Writing Papers in Western Europe 1978-1983. Cornwall: The Marketing Department ECC International Ltd. (1979).

166. IVC2A HAGEMYER ROBERT W. Future Technical Needs and Trends in the Paper Industry - III. Atlanta: TAPPI Press, (1979). Third in a series of reports prepared by the TAPPI Future Technical Needs and Trends Committee. External factors influencing the growth of the paper industry worldwide between now and 1990 are delineated and their influence on internal developments and technical needs assessed. Contains 12 contributions presented at the TAPPI Annual Meeting in March, 1979.

167. IVC2A KING KENNETH. "Paper for the Third World." Pulp and Paper International, Vol. 21, No. 11 (1979), 54-57. More than half of the world's forests are located in the developing economies, but a mere 6-7 percent of the world's capacity to produce pulp and paper is located in those countries.

168. IVC2A "PPI'S Top 100." Pulp and Paper International, Vol. 21, No. 10 (1979), 91-98. Fifth annual exclusive survey of the world's largest paper companies. Improved sales and earnings by the top 100 resulted mainly from improved production volume, with total paper and board output rising six percent to over eighty million tons. Earnings improved strongly in Europe and Japan, although they still fall far behind North American earnings. Merger activity is again on the rise.

169. IVC2B CHAUDHURI P. B., NARBY M. "Operating Problems in Developing Countries." Pulp and Paper International, Vol. 21, No. 12 (1979), 54-59. Difficulties in achieving high utilization rates are often very costly to the trade balance of developing countries. Principal reasons for poor operating records and suggestions for analyzing the problems are presented.

170. IVC2C BLYTH JAMES E., SMITH W. BRAD. Pulpwood Production in the North Central Region by County, 1977. USDA Forest Service Resource Bulletin NC-41. (1979). Discusses 1977 pulpwood production and

receipts and recent production in the lake states. Shows pulpwood production in Michigan, Minnesota, and Washington by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1977 pulpwood production and receipts data by state for the central states, and shows four production classes by county.

171. IVC2C SPRINGER EDWARD L. "An Economic Comparison of Chip Storage Methods." Tappi, Vol. 62, No. 9 (1979), 39-42. Monetary losses are compared for three methods of managing wood chips inventory at kraft pulp mills using southern pine: first-in-first-out storage; two-pile, last-in-first-out storage; and standby storage. Standby storage is shown to be the best method for minimizing monetary losses.

172. IVC4 HARPOLE GEORGE B. "Production Opportunities in Northern California." Proceedings: Structural Flakeboards from Forest Residues. USDA Forest Service General Technical Report WO-5, (1978). Wood residue volumes appear sufficient to support wood requirements for at least one large structural flakeboard plant.

173. IVC4 MALONEY T.M. "Wastes: How Much, Where, and How to Use Them in Forests and Forest Industries (2)." World Wood, Vol. 20, No. 9 (1979), 14-16. As pressures on all types of resources mount, waste management takes on increasing significance, not least in forestry and the forest industries. In part 2 of this condensation of a World Forestry Congress presentation, the author examines what has been learned in the US so far and how it could be applied in forestry and the forest industries elsewhere.

174. IVC8 BRYAN RICHARD W. "Wood Fuels Power Station." World Wood, Vol. 20, No. 10 (1979), 16-18. Potential of low-grade forest to yield an economic fuel for a generating station is being demonstrated by a utility plant in Burlington, Vermont. Conversion from coal on two boilers was under way when the decision was made to build an additional new station fired by wood. As well as offsetting rising energy costs, the project provides the means of improving much of the state's forest stands.

175. IVC8 CATINOT R. "Ways of Harnessing Tropical Forests as a Source of Energy." Bois et Forets des Tropiques, No. 184 (1979), 3-30. In French with an English summary. Concerns the answers which tropical forests could give in the solution of the

energy problems.

176. IVC8 DOAT J. "Tropical Woods, a Potential Source of Energy." Bois et Forets des Tropiques, No. 181 (1978), 41-56. In French with English and Spanish abstracts. The greatest reserves of plant material are the tropical forests, covering 15 percent of the usable surface of the earth and of which less than one sixth is harvested. Wood may be used for generating electricity, it may be pyrolysed to yield charcoal together with acetic acid, methanol, acetone, acetates, phenols, cresols and various tar products, or wood gas which may in turn be used in motors and generators. Processes are described and figures given for yields and efficiencies in the present state of technology.

177. IVC8 ELLIS THOMAS H. Economic Analysis of Wood-or Bark-Fired Systems. USDA Forest Service General Technical Report FPL 16, (1978). This is the basis for the third in a series of three slide-tape presentations designed to help people evaluate wood- and bark-fueled boiler systems as alternatives to ones using oil, gas or coal.

178. IVC8 JONES PAUL H. Energy from Forest Biomass on Vancouver Island. Environment Canada, Publication BC-X-197, (1979), 67 pp. Report of a study peformed on Vancouver Island to determine the availability and cost of forest biomass for energy production.

179. IVC8 MATTSON JAMES A., BRADLEY DENNIS P., CARPENTER EUGENE M. "Harvesting Forest Residues for Energy." Proceedings of the Second Annual Symposium on Fuels from Biomass. (1978), Vol. 1, pp 185-225. A case study of 18 million acres of commercial forest land in northern Wisconsin and Michigan has shown that 40 million green tons of material should be harvested annually, approximately 8 times the current harvest. Besides the obvious benefits of decreasing consumption of fossil fuels, using these currently underutilized renewable resources for energy would increase good forest management and increase the amounts of wood available for all uses rather than deplete the available resource.

180. IVC8 MCCARTHY R. "The Energy Potential of Forest Biomass in Ireland." Irish Forestry, Vol. 36, No. 1 (1979), 7-18. Yields of forest biomass ranging from 25-40 tons dry matter/ha/year have been obtained on productive forest lands in the U.S. Similar yields are possible in Ireland on comparable

sites. It is postulated that the energy import demands of Ireland could be reduced by 27 percent based on 1977 imports and assuming the equivalent of half the total forest area were managed on a 20 year rotation.

181. IVC8 MOREY JERRY. "Whole Tree Chips for Fuel and Pulp Can Cut Mill Energy Costs." Pulp and Paper Canada, Vol. 80, No. 10 (1979), 77-79.

182. IVC8 SAEMAN JEROME F. "Energy and Materials from the Forest biomass." Presented at the Symp. on Clean Fuels from Biomass and Wastes, Jan. 25-28, 1977, at Orlando, Florida. Intensification and reorientation of timber production and utilization offer the realistic hope of an energy self-sufficient industry with twice present output. This holds high economic potential in maintaining balance of trade and improving the relationship between gross national product and energy consumption.

183. IVC8 SAMPSON GEORGE R. Energy Potential from Central and Southern Rocky Mountain Timber. USDA Forest Service Research Note, RM-368, 1979. Low energy per unit of weight and high cost relative to coal limit wood as a major energy source in the central and southern Rocky Mountains. Without markets for higher uses, residues can provide heat, steam, or electricity. Uses will depend on improved technology and harvest efficiency.

184. IVC8 SARLES RAYMOND L. Wood Fuel Plentiful in West Virginia. USDA Forest Service Research Note NF-279, (1979). Thirty-four million tons of wood is potentially available for fuel each year. This tonnage is the annual forest growth in excess of that now harvested for roundwood products. One half of this excess can supply more than all of the state's energy needs in the residential and commercial sectors, or forty-four percent in the industrial sector.

185. IVC8 YOUNG HAROLD E. "Forest Biomass as a Source of Energy: A Policy Statement for New England." The Northern Logger and Timber Processor, Vol. 28, No. 4 (1979), 8-8, 44-46. Policy plan includes: (1) inventory of existing forests, (2) appropriate harvesting and transport equipment, (3) communication and education to promote the use of biomass as an energy source, (4) more markets to promote intensive forest management among private land owners, (5) solution of financial problems that will arise with this project, (6) increased forest production, (7)

leadership.

186. IVC8 YOUNGS R.L. "Utilization of Hardwoods for Energy." From: Proceedings of the Sixth Annual Hardwood Symposium of the Hardwood Research Council, May 3-6, 1978 at Cashiers, North Carolina. Utilization of low-grade hardwoods for energy provides an opportunity to recover some of the costs of improvement cuttings and can help attain forest management of problem stands.

187. IVC8 "Forest Biomass as an Energy Source: Study Report of a Task Force of the Society of American Foresters." Journal of Forestry, Vol. 77, No. 8 (1979), 495-502. The task force recommends that SAF adopt a national position favoring use of biomass for energy by: (1) encouraging improved estimates, equipment, and technical systems; (2) supporting forest practices, economic incentives, and legislation to increase growth of biomass; (3) promoting use of waste wood; (4) encouraging substitution of wood for more energy-intensive materials; (5) supporting needed research.

188. IVC9 HUNT M.O., HOOVER W.L., FERGUS D.A., LEHMANN W.F., MCNATT J.D. "Red Oak Structural Particleboard." Forest Products Journal, Vol. 29, No. 9 (1979), 43-49. This research suggests the possibility of manufacturing structural particleboard from an under-utilized resource that is in close proximity to the major construction markets of the eastern United States.

189. IVC9 Structural Flakeboard from Forest Residues. USDA Forest Service General Technical Report WO-5, (1978), 241 pp. Proceedings of a symposium presented by the USDA Forest Service, June 6-8, Kansas City, MO.

190. IVD2 SMITH KEN. "Naval Stores Production Fails to Meet Rising World Market Demands." Pulp and Paper, Vol. 53, No. 12 (1979), 156-159. Report from Sixth International Naval Stores meeting in Atlanta.

191. VA1 ADAMS DARIUS M., HAYNES RICHARD W., MILLS THOMAS J., SHEARER DAVID, CHILDRESS STEVEN. Production, Consumption, and Prices of Softwood Products in North America -Regional Time Series Data, 1950-1976. Oregon State University Research Bulletin 27, (1979), 43pp. The data included here were compiled for use in the 1980 Renewable Resources Planning Act Timber Assessment conducted by the U.S. Forest Service. They were used to develop structural

equations and relationships comprising the 1980 Timber Assessment Market Model. These data series-covering U.S. demand, U.S. supply, and Canada - span 27 years of softwood production and consumption. Many were derived from unpublished sources, so this computation makes such data generally available to analysts for the first time.

192. VA1 HUTTUNEN T. "Wood Consumption, Total Drain and Forest Balance in Finland." Folia Forestalia, 376, (1979), p47. In Finnish with an English summary. Part of a series of annual wood statistics pubished by the Finnish Forest Research Institute since 1964. Final statements of wood consumption, total drain and forest balance in Finland for 1976 including preliminary estimates for 1977 and 1978. Time series are included for the period 1955 to the present.

193. VA1 STONE ROBERT N, MARCIN THOMAS C. Surveys for Forest Resource Demand Analysis. USDA Forest Service Approved Technical Article, USGPO: 1978-750126/14. (1978). Resource use surveys for timber products and recreation are contrasted with Natural resource inventories in presenting the objectives and characteristics of surveys of resource use. A conceptual model of a wood consumption statistical system illustrates the range of timber use surveys. Aspects of projecting resource demand are discussed.

194. VA2 HYTÖNEN-KEMILÄINEN R. "Finland's West-European Sawnwood Markets 1950-1975, with an Econometric M odel for Forecastig the Area's Sawnwood Consumption." Folia Forestalia, 385, (1979). In Finnish with English summary. The study includes a descriptcn of the development of West-European sawn soft-wood markets in 1950-1975 and an intermediate-range model for forecasting sawn soft-wood consumption in Great Britain, the Federal Republic of Germany, France, Denmark, the Netherlands and Belgium. The period of estimation of the model is 1955-1975.

195. VB1 KALLIO EDWIN, DICKERHOOF EDWARD. "Business and Economic Information Available for Market Planning." Forest Products Journal, Vol. 29, No. 10 (1979), 61-66. To help forest products industry managers keep abreast of business developments, research findings and market data, the Forest products Research Society has published an information source book. This paper highlights a few of the more significant sources of information covered in the book and discusses some of the

developments in the field of computerized information retrieval.

196. VB1 PÄRNÄNEN KEIKKI. "The Forest Industry Exchange Rate Policy." Unitas, 2 (1979), 53-59.

197. VB3 AWAYA HITOSHI. "A Method of Developing Stumpage Volume Tables and Stand Yield Tables." Japan Agricultural Research Quarterly, Vol. 12, No. 4 (1978), 228-231.

198. VB4 DICKERHOOF H. EDWARD, MARCIN THOMAS C. "Factors Influencing Market Potential for Structural Flakeboard." from the Proceedings, Structural Flakeboards from Forest Residues. USDA Forest Service General Technical Report WO-5, (1978). The success of structural flakeboard manufacture in the US will depend on: market demand, competition from other domestic and foreign board manufacturers, building code acceptance, and the physical characteristics of the product.

199. VB4 JACKSON FRANCIS M. "The Pulpwood Scene: Supply Position and Market Trends for Panelboard, Hardboard and Pulp." Irish Forestry, Vol. 35, No. 2 (1978), 130-137. Covers the world scene, Europe, and Republic of Ireland.

200. VB4 SCHULER ALBERT T. "Econometric Model of the Domestic Insulation Board Industry." Forest Products Journal, Vol. 29, No. 8 (1979) 21-25. Sound investment planning by the insulation board industry requires quantitative market information in the form of price and consumption projections for their products. Estimates of future demand are also needed by forest planners to evaluate current forest programs, establish timber growth goals, and aid in formulating forest policies and proposed programs.

201. VB4 VALTONEN KARI. "End-Use Information for Marketing in Sawmill and Wood-Based Panel Industries." Folia Forestalia, 391 (1979), 26. In Finnish with an English summary.

202. VB4 YOUNQUIST JOHN A., BRYANT BEN S. "Production and Marketing Feasibility of Parallel-Laminated Veneer Products." Forest Products Journal, Vol. 29, No. 8 (1979), 21-25. A wide range of performance characteristics and product costs are possible. Sixteen potential market areas were identified.

203. VB5A MCDONALD ALONZO L. "MTN Agreements Should Allow Increased Southern Paper Exports." Southern Pulp and Paper Manufcturer, Vol. 42, No. 8 (1979), 18. Recently concluded Tokyo Round of Multilateral Trade Negotiations (MTN) will be particularly beneficial to the U.S. paper industry. The agreements should lead the way for significant increases in export opportunities in the years ahead for southern paper and board producers.

204. VB5A VAUGHAN WILLIAM H. "Next World Pulp Market Downturn Expected to Be of Average Length." Pulp and Paper, Vol. 53, No. 10 (1979), 78-79. Long-term outlook is for increasing tightness in pulp markets, with milder downturns and sharper upturns, causing problems for spot buyers.

205. VB7 SULLIVAN ROBERT J. "Tree Growers Face Complex Market." American Christmas Tree Journal, Vol. 23, No. 4 (1979), 15-17. Discusses the Christmas tree market over the past twenty years, amateurs looking for tax shelters, and the complexity of growing marketable Christmas trees.

206. VB7 WILSON LOWELL, DANIEL RONNIE. "Christmas Tree Demand in Alabama." Highlights of Agricultural Research, Vol. 26, No. 3 (1979), 3. Overall, the demand for cut and live trees in 1978 amounted to about 85 percent of the commercial household market for Christmas trees.

207. VC1 BERCK PETER. "The Economics of Timber: A Renewable Resource in the Long Run." The Bell Journal of Economics, Vol. 10, No. 2 (1979), 447-462. Predictions of the long-term price trends for timber indicate a slowdown in the rate of price increase.

208. VC2 WHITE, MARK. "Analysis of Sawmill Performance: Part III Grade Yield Study." LMA Newsletter, 20, No. 8 (1979), 7, 9, 11, 13. From yield information, a value can be determined for each log class based on the value of the lumber produced. This can assist the manager in pricing logs and determining which logs should be sold as pulpwood and which as veneer logs.

APPENDIX

THESES AND DISSERTATIONS

IN PROGRESS IN THE UNITED STATES AND CANADA

The following citations include the student's name followed by the subject of the dissertation or thesis, the institution where the degree is being completed, the degree, and the anticipated date of completion. An author index for the appendix follows the main author index.

1. IB2 SHAW ROBERT C. The timber resource in South Carolina and its effect on the state's economy. Clemson Univ. M.S. August, 1981.

2. IB5 HADI YUSUF B. A linear programming model for Malaysia forest sector. Univ. of British Columbia. Ph.D. December, 1981.

3. IB5 WALKER EDWIN W. Role of the forestry sector in the economic development of Liberia. Univ. of Toronto. M.Sc.F. June, 1980.

4. IC FITZSIMMONS WILLIAM. Economic analysis of the forestry incentive program in Massachusetts. Univ. of Massachusetts. Masters. September, 1980.

5. IC SEUS RUSSELL F. Goals and means of implementation of multiple use policies by federal agencies. State Univ. of New York. M.S. June, 1980.

6. IC WEINGARDNER SAMUEL. Impact of a federal court injunction, banning clearcutting on the national forests of Texas, on the Texas economy. Stephen F. Austin State Univ. Doctor of Forestry. August, 1980.

7. ID1B KRONRAD GARY D. Cost-benefit analysis of forestry yield taxes program in Massachusetts (chapter 61) and its impact on forest management. Univ. of Massachusetts. Ph.D. May, 1981.

8. ID1B PORTER HUGH M. Case study of incidence of real property tax on forest and farm property in New York. State Univ.of New York. M.S. March, 1980.

9. ID1B ROWE BLAKE. Compensation for public land impacts and support of county resource programs in northeastern and north central Minnesota. Univ. of Minnesota. M.S. March, 1980.

10. ID2 APPLE DANIEL. Differential assessment of forestland. State Univ.of New York. Ph.D. June, 1980.

11. ID2 BLYSTONE RANDALL. Investigation of land use codes in the assessment of forestland. State Univ. of New York. M.S. June, 1980.

12. ID4 MARTIN PATRICK M. Alternate conceptions of justice and their implications for the distribution of benefits and burdens arising from the public management of the national forests. Humboldt State Univ. M.S. June, 1980.

13. ID4 SCHROEDER HERBERT W. Public values in natural resource management: effect of perceived conflict on the evaluation of the importance of forest management goals. Univ. of Arizona. Ph.D. May, 1980.

14. IE THOMSON THOMAS A. Economic aspects of forestry research planning in an industrial organization: theory and cases. Univ. of California. Ph.D. June, 1981.

15. IF BURKE JAMES. Resource managers' and resource educators' perceptions of curriculum needs and skill requirements for training outdoor recreationists. Utah State Univ. M.S. August, 1980.

16. IF MINCOLLA JOSEPH. Pofessional subcultures in forestry and outdoor recreation. Utah State Univ. Ph.D. June, 1981.

17. IIB2B ADAMS JEFFERY C. Public involvement and the U.S. Forest Service. Colorado State Univ. M.S. May, 1980.

18. IIB2C BAUGHMAN MELVIN J. Delphi study of county forest land administrative goals or problems in Minnesota. Univ. of Minnesota. Ph.D. March, 1981.

19. IIB3A PHELPS NANCY BLAIR. A socio-economic study of the private woodlot owners' part in the use of wood for fuel in Nova Scotia. Dalhousie Univ. M.S. September, 1980.

20. IIB3C ABRUZZESE JOHN R. Opportunities for benefits from currently unmerchantable wood on private nonindustrial forest lands. Mississippi State Univ. M.S. May, 1980.

21. IIB3C BULLARD STEVEN HENRY. The potential softwood sawtimber supply from Mississippi's private nonindustrial forests. Mississippi State Univ. M.S. May, 1980.

22. IIB3C DAVIS LARRY. Opportunities for improving reforestation practices on private nonindustrial forests in Central Mississippi. Mississippi State Univ. M.S. May, 1980.

23. IIB3C KNAPP GUNNAR. Estimation of short-run timber supply from nonindustrial private forests. Yale Univ. Ph.D. May, 1980.

24. IID1 PERSHALL RICHARD. Private investment as an alternative for strip mine reclamation in mid-Misssouri. Univ. of Missouri. M.S. May, 1980.

25. IIIA4 PARK PAUL S. Financial maturity of sugar maple in western New York. State Univ. of New York. M.S. February, 1980.

26. IIIA5 VOILAND MICHAEL JR. Perceptions and preferences of vacation regions in the Northeast United States: an analytical study of perceived recreational utility and related factors as determined by a Syracuse survey. State Univ. of New York. Ph.D.

27. IIIA5A EVERLY THOMAS B. The adjustment and automated use of the outdoor recreation opportunity spectrum system to classify areas of recreation opportunity in the Pisgah National Forest, N.C. North Carolina State Univ. M.S. May, 1980.

28. IIIA5A SCHMIDT THOMAS L. Outdoor recreation as a land use in Missouri. Univ. of Missouri. M.S. May, 1980.

29. IIIA5A WHITE ROBERT. Psychological outcomes of high risk recreation. Utah State Univ. Ph.D. June, 1981.

30. IIIA5A WILLIAMS STEPHAN B. A study of Blue Ridge Parkway use by area residents with the development of a demand model. Virginia Polytechnic Inst. and State Univ. M.S. August, 1979.

31. IIIA5B BUSS ERIC. Determination of recreational carrying capacity of canoe rivers from 1:15840 air photos. Univ. of Toronto. M.S. September, 1980.

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33. IIIA5C HAHN MARTHA. Use of imagery as a tool for operationalization of the recreation opportunity spectrum. Utah State Univ. M.S. June, 1980.

34. IIIA5D BUTLER JOHN. Lifestyle as a determinant of participation among dispersed forest recreationists. Utah State Univ. M.S. August, 1980.

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1981.

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37. IIIA5E BOONE GEORGE F. Recreation management in a wilderness area. Ohio State Univ. M.S. June, 1980.

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